20. (a) Give an account on inter penetrating network polymers. (6)

(b) Write the salient features of electroluminescent polymers with examples. (4)

NOVEMBER/DECEMBER 2023

GECH14A/DECH14A — ADVANCED POLYMER CHEMISTRY

Time : Three hours Maximum : 75 marks

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SECTION A — ($10 \times 2 = 20$ marks)

Answer ALL the questions.

1. What is functionality of polymer? Give an example.

2. Write short notes on elastomers.

3. What is meant by degree of polymerization? Give an example.

4. Briefly write about copolymerization.

5. What is glass transition temperature? Explain.

6. State and explain the mechanical properties of polymers.

7. Give the preparation method of Teflon.

8. Where are ion-exchange resins commonly used?

9. Write short notes on biopolymers.

10. What are high temperature polymers? Give examples.

SECTION B — (5 × 5 = 25 marks)

Answer ALL the questions.

11. (a) Explain thermoplastics and thermosetting plastics with suitable examples.

Or

(b) Write notes on molecular forces and chemical bonding in polymers.

12. (a) Discuss in detail about Ziegler-Natta Catalyst polymerization.

Or

(b) Write a note on (i) initiators (ii) retarders.

13. (a) Describe the thermogravimetric analysis technique of polymers with relevant graph.

Or

(b) Write notes on crystalline solids and their behaviour towards X-rays.

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14. (a) Discuss the preparation and application of polyurethanes.

Or

(b) Explain the importance of natural polymers.

15. (a) Give an account on polymer composites.

Or

(b) Describe the importance of conducting polymers with examples

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Write an account on various techniques of polymerization.

17. Elaborately discuss the kinetics and mechanism of free radical polymerization.

18. Discuss the determination of molecular weight of polymer by using gel permeation chromatography.

19. Describe the structure and applications of the following

(a) Starch (3)

(b) Cellulose (3)

(c) Chitosan derivatives (4)